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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,442	07/25/2003	Chien-Min Sung	00802-22001	3424

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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12/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/627,442

Applicant(s)

SUNG, CHIEN-MIN

Examiner

Michael A. Marcheschi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 9, 10, 12-17 and 21-30 is/are pending in the application.
- 4a) Of the above claim(s) 21-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/20/07 has been entered.

Claim 12 is objected to because of the following informalities:

The limitation defined in lines 1-2 of claim 12 (the substrate...metal binder) is already defined in claim 1. Appropriate correction is required.

Claims 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12-15 are indefinite because they depend on a canceled claim.

Claims 1-5, 9, 10 and 12-17 are rejected under 35 U.S.C. 103(a) as obvious over WO 02/09909 in view of Cerutti and further in view of Phaal et al. and Wentorf, Jr. et al.

The WO reference teaches in the abstract, page 3, line 1, page 7, lines 19-20, page 8, lines 17+, and the claims, a diamond compact for abrasive operations (tool), said diamond

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compact comprising a self-sintered mass of diamond particles having a nanometer size (i.e. less than 60 microns).

Cerutti teaches in the abstract, column 3, line 59-column 4, line 5, column 7, line 60-column 8, line 5 and the claims, a diamond compact which is attached to a carbide substrate to form a tool, said diamond compact comprising a sintered mass of diamond particles having a submicron size.

Phaal et al. teaches in claim 1 that diamond masses are known to be attached to a carbide support by way of a diamond/catalyst layer (coarser sized diamonds than in the mass-broadly reads on any size above the size of diamonds in the mass, thus broadly encompassing the claimed sizes).

Wentorf, Jr et al. et al. teach in column 4, lines 44-46 that diamond masses are known to be attached to a carbide support by way of a diamond/catalyst layer (coarser sized diamonds than in the mass-broadly reads on any size above the size of diamonds in the mass, thus broadly encompassing the claimed sizes) in order to minimize the stress concentration.

The WO reference teaches a diamond article comprising a self-sintered mass of nanodiamond particles (i.e. no catalyst is used), wherein the size of the diamonds are less than 60 microns and this reads on any value below 60 microns, thus including and making obvious the claimed size because the reference overlaps the claimed range. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

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Although the WO reference is silent as to the limitation “a substrate attached to the mass of the sintered diamond”, this aspect is obvious because the WO reference states that the diamond compact can be used for abrasive operations and this broadly includes cutting tools and as is well known from Cerutti, cutting tools based on diamond compacts are known to include a substrate attached to said compact. In view of this, it is the examiners position that the claimed limitation is obvious because the use of a substrate to make a diamond tool is well within the level of ordinary skill in the art.

Although the above combination, especially Cerutti, does not teach the limitation “including a layer of at least micron size diamonds bonded together by a metal binder”, it is the examiners position that in the articles according to WO 02/09909 in view of Cerutti stress gradients are apparent between the mass and the substrate and therefore it is the examiners position that one skilled in the art would have found the use of any teaching obvious to minimize the above stress gradients. Since Phaal et al. and Wentorf, Jr. et al. teach how this stress can be minimized, the use of any teaching to minimize the stresses (i.e. include a diamond/catalyst layer on the substrate) is obvious and well within the level of ordinary skill in the art.

In view of the above combination, the limitations of claims 1-2, 5, 8, 9, 12-15 and 17 are met. With respect to claims 3 and 4, the WO reference teaches a mass of nanodiamond diamond particles and these claims are defining process limitations, and as is well known, process limitations to define the product in "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964. With respect to the limitation of claim 16, it is the examiners position that the tools of the combined references meet this criteria because this is a function of the tool composition and

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since the composition is the same, it inherently has the same characteristic absent evidence to the contrary. With respect to the limitation of claim 10, it is the examiners position that absent evidence to the contrary, no recitation of particle orientation, makes obvious random oriented particles absence evidence to the contrary and evidence that the reference mass does not have this feature.

Finally, with respect to the last limitation of this claim, the WO reference teaches a porosity of 5 percent and it is the examiners position that this porosity will be "low enough" (the instant claims do not define a value) to prevent progression of the metal binder into the self sintered mass according to the WO reference, when the mass is attached to the substrate, as is obvious for the above reasons. Assuming arguendo, although the porosity is defined as 5 percent, it is the examiners position that not all of this porosity will be external porosity and in fact can be approximately all internal porosity and thus with no external porosity present, no progression of the metal binder into self sintered mass will occur. Burden is upon applicant to show otherwise.

Applicant's arguments filed 9/20/07 have been fully considered but they are not persuasive.

All of applicants arguments are directed to the WO reference and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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In as much as applicant argues the size of the diamonds defined by the WO reference, this is not persuasive because claim 8 of the reference defines a size less than 60 microns and this broadly encompasses any and all values below 60 microns, thus reading on the claimed size.

Applicant also argues the combination defined in claim 1, however, all the arguments are directed to the WO reference alone and not the combination, as applied.

Applicant appears to argue that the WO reference teaches a porosity of 5 percent and this will not prevent progression of the metal binder into the mass of self sintered diamonds. This is not persuasive because it is the examiners position that this porosity will be "low enough" (the instant claims do not define a value) to prevent progression of the metal binder into the self sintered mass according to the WO reference, when the mass is attached to the substrate, as is obvious for the above reasons and applicant has not clearly shown otherwise. In addition, assuming arguendo, although the porosity is defined as 5 percent, it is the examiners position that not all of this porosity will be external porosity and in fact can be approximately all internal porosity and thus with no external porosity present, no progression of the metal binder into self sintered mass will occur. Burden is upon applicant to show otherwise.

Finally, applicant argues the shape of the particles and states that such shape naturally produces a greater porosity in the final product than if the particles were tightly packed. Although this may be true, this argument does not clearly show that progression of the metal binder will occur in the articles according to the combined references.

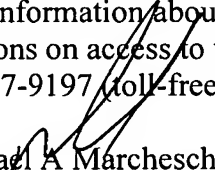
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/07
MM


Michael A. Marcheschi
Primary Examiner
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